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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : YAGYU, Walter T.  
Appl. No. : 10/020,275  
Filed : December 18, 2001  
Title : TIE ROD WITH APPLICATION OF POLYMER  
COMPOSITE WITH FIBERS REINFORCEMENT

Group Art Unit : 3679  
Examiner : FERGUSON, M.

Docket No. : 08200.608

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**APPEAL BRIEF UNDER 37 C.F.R. § 1.192**

October 5, 2005

Hon. Comissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Dear Sir:

In follow-up to the Notice of Appeal filed June 23, 2004, Appellant respectfully requests the Board of Patent Appeals and Interferences consider the following arguments and reverse the decision of the Examiner in whole. No fees are deemed necessary at this time; however, the Commissioner is hereby authorized to charge applicant's deposition account no. 50-0548 to maintain the pendency of this application.

**(1) Real Party in Interest**

The real party in interest is DANA INDUSTRIAL S/A.

**(2) Related Appeals and Interferences**

In follow-up to the Notice of Appeal filed June 23, 2004, Appellant filed on October 25, 2004 an Appeal Brief presenting arguments for the patentability of claims 1-3. In the Office Action of December 16, 2004, the Examiner withdrew the finality of the Office Action dated March 23, 2004 and reopened the prosecution of the present application on new grounds of rejection. There are no other known related appeals or interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal.

**(3) STATUS OF CLAIMS**

1. Claims 1-3 are pending in the application.
2. Claims 1-3 have been rejected and are being appealed.

**(4) STATUS OF AMENDMENT**

The Office Action finally rejecting claims 1-3 was mailed on May 3, 2005. On July 7, 2005 Appellant filed Request for Reconsideration presenting arguments for the patentability of claims 1-3, which has been entered and considered by the Examiner. On August 1, 2005

the Examiner issued an Advisory Action Before the Filing of an Appeal Brief indicating that Request for Reconsideration of July 7, 2005 has been considered, and claims 1-3 have been rejected. Subsequently, there have been no other papers filed by the Appellant or issued by the U.S. PTO.

## **(5) SUMMARY OF THE INVENTION**

The instant invention, as claimed in independent claim 1, is directed to a tie rod comprising a stem (1) provided at its ends with ball joints (2) each composed of a metallic ball joint box, a bearing (3), a protection cover (4) and a ball pin (6) (see page 4, lines 5-8 and Figs. 1-2). The tie rod is provided for fixing pieces and components of a mechanical system between themselves, while allowing angular and rotational movement therebetween, supporting the strains concentrated therein (see page 1, line 20 – page 2, line 2). The stem of the tie rod is made of material comprising a polymer composite with fiber reinforcements and combined with components of the metallic ball joint box (see page 4, lines 6-7 and page 4, lines 15-18).

According to claim 2, the ball joints (2) of the tie rod of claim 1, are attached to the ends of the stem (1) by chemical fixing that, due to the process of application, cure and drying, assures the resistance required to the objective to which ball joints are intended, making the tie rod a tie rod with fixed length (see page 4, lines 19-22, and Fig. 1).

Alternatively, according to claim 3, the ball joints are attached to the ends of the stem by means of a thread on the body of the stem and in the ball joints' boxes, making the tie rod a tie rod with variable length (see page 4, lines 1-5, and Fig. 2). The adjustment of its length

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and the locking of the tie rod is provided by nuts provided on the threads of the stem and that are tightened against the boxes of the ball joints.

#### **(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1-3 stand rejected under 35 USC § 103(a) as being unpatentable over Shimizu et al. (USP 5,368,408) (hereinafter referred to as Shimizu) in view of Pazdirek et al. (USP 6,398,446) (hereinafter referred to as Pazdirek) and Kobayashi (USP 5,092,703) (hereinafter referred to as Kobayashi).

#### **(7) ARGUMENTS**

##### Sub-paragraph (iv)

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Pazdirek and Kobayashi. It is noted that claim 1 is an independent claim and that claims 2 and 3 depend upon claim 1.

Regarding claim 1: the present invention is a combination of the tie rod made of a polymer composite with fiber reinforcement and the metallic ball-joint box or housing. The prior art fails to teach or suggest this combination of components.

Indeed, the Examiner admitted that Shimizu fails to disclose the tie rod made of material comprising a polymer composite with fiber reinforcements, and secured to the metallic ball joint box.

Pazdirek teaches a ball joint assembly including a housing injection molded from a high strength thermoplastic material (not a composite material) and a link formed of an aluminum tube or, alternatively, a composite rod. The Examiner erroneously alleges that the housing of Pazdirek is formed of a composite material and that the metal and composite materials are interchangeable known alternative. The Examiner then alleges that it would have been obvious to one of ordinary skill in the art to modify the tie rod of Shimizu to have a stem made of a composite material as taught by Pazdirek "as metal and composite materials are interchangeable known alternatives, and the use of metal tie rod components with composite tie rod components is known within the art." Applicant respectfully disagrees. Firstly, the fact that the metal and composite materials are not interchangeable is confirmed by Pazdirek himself which discloses that the plastic housing is preferably assembled to the metal link by first heating the end of the metal link to a temperature higher than the softening temperature of the housing. Alternatively, the composite link is adhesively secured to the housing. In other words, the thermal characteristics of the metal and composite materials are very different. Thus, the metal and composite materials are not interchangeable. Secondly, Pazdirek fails to disclose the housing made of metal material, hence the combination of the tie rod made of a polymer composite material with fiber reinforcements and the metallic ball joint box.

Kobayashi also fails to disclose the stem of the tie rod made of material comprising a polymer composite with fiber reinforcements and connected to the metallic ball joint box. Kobayashi teaches a ball joint including a single-piece housing having two inner chambers in which spherical head portions of ball studs are housed, connected by a link. The housing is formed of a composite material composed by mixing inorganic filler, e.g., glass fiber in

polypropylene. In other words, Kobayashi fails to disclose the stem of the tie rod and the separate ball joint box made of different materials.

The Examiner erroneously alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Shimizu, Pazdirek and Kobayashi, and that the combination of Shimizu, Pazdirek and Kobayashi would constitute the claimed invention as recited in claim 1.

First, MPEP 2143.01 specifically states that the mere fact that reference can be modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). There is no suggestion to support the Examiner's assertion. Clearly, Shimizu, Pazdirek and Kobayashi cited by the Examiner fail to disclose or present any motivation or suggestion to provide the combination of the tie rod made of a polymer composite material with fiber reinforcements and the metallic ball joint box.

Second, even if the combination of and modification of Shimizu, Pazdirek and Kobayashi suggested by the Examiner could be made, the resulting heat exchanger apparatus still would lack the combination of the tie rod made of a polymer composite material with fiber reinforcements and the metallic ball joint box. In other words, the combination of the prior art documents applied by the Examiner will not result in the combination of materials set forth in claim 1.

Therefore, the Examiner's rejection of claim 1 under 35 U.S.C. 103(a) is improper.

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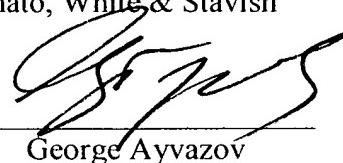
Regarding claim 2: In addition to the above arguments regarding the rejection of claim 1, none of the prior art references applied by the Examiner teaches the composite tie rod attached to the metallic ball joint box by chemical fixing. Again, the prior art references applied by the Examiner fail to teach a combination of different materials forming the ball joint and the tie rod. Thus, one of ordinary skill in the art would not find the invention of claim 3 obvious in view of the teaching of Shimizu, Kobayashi and Pazdirek. Therefore, the Examiner's rejection of claim 2 under 35 U.S.C. 103(a) is improper.

Regarding claim 3: In addition to the above arguments regarding the rejection of claim 1, none of the prior art references applied by the Examiner teaches the composite tie rod threadedly and adjustably connected to the metallic ball joint box. Therefore, the Examiner's rejection of claim 3 under 35 U.S.C. 103(a) is improper.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance, and notice to that effect is earnestly solicited. Appellant will request an oral hearing on the merits within two months after the date of the Examiner's answer.

Respectfully submitted:  
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**(8) APPENDIX OF CLAIMS ON APPEAL**

1. Tie rod with application of polymer composite with fiber reinforcement, comprising a stem provided at its ends with ball joints each composed of a metallic ball joint box, a bearing, a protection cover and a ball pin, said tie rod having the function of fixing pieces and components of a mechanical system between themselves, providing to them angular and rotational movement, supporting the strains concentrated therein, wherein the stem of the tie rod is made of material comprising a polymer composite with fiber reinforcements, and combined with components of the metallic ball joint box.

2. Tie rod with application of polymer composite with fiber reinforcement, according to claim 1, wherein the ball joints are attached to the ends of the stem by chemical fixing that, due to the process of application, cure and drying, assures the resistance required to the objective to which the ball joints are intended, making the tie rod a tie rod with fixed length.

3. Tie rod with application of polymer composite with fiber reinforcement, according to claim 1, wherein the ball joints are attached to the ends of the stem by means of a thread on the body of the stem and in the ball joints' boxes, making the tie rod a tie rod with variable length, the adjustment of its length and the locking of the tie rod being provided by nuts provided on the threads of the stem and that are tightened against the boxes of the ball joints.